

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning at page 2, line 1 with the following rewritten paragraph:

Ride-on, tractor-drawn planters are known, in which one or more people on the traileed unit manually remove plants from the propagation trays and then place the plants into a moving array of cups. The cups transport the plants to a chute, and they are dropped into the chute which then conveys the plants down to the ground. The speed at which the array of cups is moved thus, in part, determines the eventual spacing of the plants in the ground. However, in addition to requiring a large amount of labour, the use of drop chutes presents a further problem. The time taken for a plant to fall through the chutes will depend on a number of factors, including the weight of the root portion of the plant (which is very dependent on the moisture content) and the quantity and configuration of the foliage. These factors can vary from tray to tray, and indeed from cell to ~~self~~ cell within a single tray, and so even if extracted plants are presented at a uniform rate to the top of the drop chute, the rate at which they emerge will vary and so leads to a variation in plant spacing.

Please replace the paragraph beginning at page 4, line 6 with the following rewritten paragraph:

The fingers may be mounted on a support assembly, comprising a support tube, and the spacer member may be mounted on a control rod, which is movable inside the support tube to slide the spacer up and down relative to the fingers. In embodiments comprising a plurality of plant extraction means, the control rods of the spacers may be linked together so that the ~~spaces~~ spacers can be slid in unison.

Please replace the paragraph beginning at page 5, line 1 with the following rewritten paragraph:

Advantageously, the planter may further comprise means for adjusting the separation of the plant extraction means in the row. Thus, the planter may be adjustable to accommodate different forms of propagation trays. This can avoid the plant grower having to go to the considerable expense of perhaps purchasing new propagation trays to suit a particular planter. The planter may incorporate suitable sensors to determine the cell spacing in the propagation trays, and may also comprise actuator means for setting the extraction means spacing accordingly. Alternatively, the extraction means spacing may be manually adjustable before commencing use.

Please replace the paragraph beginning at page 5, line 28 with the following rewritten paragraph:

Preferably, the delivery means comprises: a delivery assembly operable to receive an extracted plant and convey it from a first height above the ground; and plant transport means arranged to receive extracted plants from the plant extraction means and present them to the delivery assembly. The plant transport means may comprise a plurality of holding ports, each port being adapted to receive a root portion of an extracted plant, and control means operable to hold the ports in a static state, whereby the ports can be loaded with extracted plants, and to move the ports to convey the received plans to the delivery assembly.

Please replace the paragraph beginning at page 8, line 1 with the following rewritten paragraph:

Preferably the planter assembly further comprises a second plant conveyor, and conveyor control means adapted to hold one conveyor in a static state for receiving extracted plants from the plant extraction means, and at the same time to move the other conveyor to convey previously received ~~plans~~ plants to the delivery belt assembly.

Please replace the paragraph beginning at page 13, line 1 with the following rewritten paragraph:

Figures 10 to 13 are views of components of the plant extraction mechanism from figures 6 to 9 in use to extracted a ~~plants~~ plant from a propagation tray;

Please replace the paragraph beginning at page 15, line 1 with the following rewritten paragraph:

The shape of the actuator is such that as it is forced down the fingers 8 ~~it causes them~~ are caused to converge. The convergence of the fingers 8 imparts a pinching action on the plant base 4 and holds it firmly.

Please replace the paragraph beginning at page 18, line 17 with the following rewritten paragraph:

The gripped plant can then be moved to a desired position, for example to a stationary indexing belt, and then released in the following way. The support tube ~~84~~ 83 can be held at a particular position, and the spacer block 90 can be driven downwards in relation to the fingers, to drive the root ball off the fingers. As the block pushes downwards on the root-ball upper surface, it slides down between the fingers and causes them to straighten.

Please replace the paragraph beginning at page 20, line 15 with the following rewritten paragraph:

Referring now to figure 19, another embodiment comprises propagation tray locating means 20 arranged to locate and hold in a predetermined position a propagation tray 2. In this simplified example, there are 16 cells in 4 rows, three of which have already been emptied. An array of four plant extraction mechanisms ~~the~~ are supported on a gantry 60 which is movable over the tray 2 in a direction shown generally by arrow A. In the figure, the array of extraction mechanisms has picked up a row of plants, whose foliage is shown by broken lines 41. The planter comprises a first, conveyor 70 and a second conveyor 71, each of which provides a plurality of holding ports 17 for receiving extracted plants from the plant extraction means. The gantry 60 is able to move over both conveyors to deposit extracted plants in their holding ports. The conveyors are separated by separating plates 72 which help prevent tangling of foliage between plants in the adjacent conveyors. For each conveyor, an array of extraction blades 50 is provided, supported on a common drive bar 51. When the extraction means places the row of plants in the holding ports the drive bar 51 is moved to insert the blades 50 into the sides of the root portions to hold them in the holding means while the extraction means is withdrawn, ready to extract another row of plants. Then, the blades 50 are themselves

withdrawn. Movement of the drive bars 51 is indicated generally by arrows C. Control means, not shown in the figure, is provided, and which is able to hold one of the conveyors in a static state while it operates the other to transport deposited plants to a delivery mechanism. In the figure, conveyor 70 is shown in its static state, and contains a complete row of deposited plants. Conveyor 71 is being operated by the control means. Its motion is not continuous, but rather comprises a series of indexed steps to present the row of deposited plants sequentially, at predetermined intervals, to the delivery assembly. The delivery assembly comprises two soft rubber endless belts 18, guided and driven by wheels ~~70~~ 74 so as to rotate at the same speeds but in opposite directions. The belts are arranged next to each other such that they can take in the foliage of a plant, hold it, and convey it to the ground. The foliage of two plants, held and being conveyed by the drive belts 18, are shown schematically in the figure. Rotation of the belts is shown by the arrows D. In this embodiment the belts 18 are arranged to catch the foliage of plants conveyed by both conveyors. In other embodiments, the belt arrangement may be movable between a first position in which it catches plants from a first conveyor and a second position in which it catches plants from the second conveyor. The planter also comprises a colter ~~71~~ 75 arranged to cut a slot or furrow in the soil. The belts 18 are arranged to release the plants they

convey into the slot. A pair of press wheels ~~72~~ 76 is arranged to trail the colter, to fold in and compact the disturbed soil around the deposited plants. This arrangement tends to yield a relatively loose central strip of soil in which the plants are planted, with relatively compacted soil on either side. This is advantageous from the point of view of water supply to the growing plants. The looser soil tends to sink when watered, yielding a depression in which the root ball sits. This helps to retain water, supplied subsequently, around the roots.

Please replace the paragraph beginning at page 21, line 25 with the following rewritten paragraph:

Looking now at figure 20, this shows part of a plant conveyor suitable for use in embodiments of the invention. The conveyor comprises a plurality of fin pairs 14,15, which are linked together in chain-like fashion to create an endless belt. The pairs of fins come together to define holding ports 17 for holding plants. As the fins travel around drive wheels 403 the holding ports open to release the previously held plants. Each fin comprises a barb 145 directed inwardly into the holding port 17 to assist retention of the received plant until it is due for release. The fins extend to a height which is approximately twice that of the barb height from the base of the holding ports. These high fin walls ~~helped~~ help to keep the plants separated, and

together with the plants help prevent plants being dragged out prematurely when an adjacent plant is released, and whose foliage may have become entangled. The figure shows, in highly schematic form, one plant in the process of being released. Its foliage 41 is about to be captured by a delivery belt assembly 18. A previously released plant is being conveyed downwards by the delivery belts 18, with its foliage and stalk being gripped such that its root portion 4 is suspended below the delivery belt mechanism. A sensor 400 is arranged to detect the foliage of plants in the holding ports just before they are due to be released to the delivery mechanism. The sensor sends a signal to a controller 401 which then controls drive means 402 coupled to the drive wheels 403 of the conveyor. In the figure, the holding port currently aligned with the sensor 400 contains a plant whose foliage 410 is inadequately developed. The sensor 400 senses this and the conveyor, after releasing the preceding plant, quickly indexes ~~forwards~~ forward two positions so that the delivery belt arrangement 18 ~~received~~ receives properly developed plants at a relatively uniform rate. As the foliage 410 is inadequately developed, it cannot be captured by the delivery belts 18, and is simply discarded onto the floor as the conveyor is advanced.

Please replace the paragraph beginning at page 22, line 25 with the following rewritten paragraph:

The automated planter shown in figure 21 comprises a conveyor 70 carrying a plurality of sidewalls 170 on an endless belt, those walls defining holding ports 17 for holding and conveying plants. As the conveyor moves the plants along their foliage is sequentially presented to a delivery belt system 18. This belt system comprises two contra-rotating soft rubber belts which grip the foliage between them and carry the plants downwards and deposit them, root portion first, into a slot 701 cut by a colter ~~71~~ 75 with a sharp leading edge 700. Press wheels ~~72~~ 77, for firming the soil around the deposited plants are arranged to trail the colter. The direction of travel of the device during the planting operation is shown generally by arrow A. The planter also comprises plant conveyor cleaning means 78 which, in this embodiment, is arranged to direct a jet of air at the returning portion of the conveyor belt to clean out the holding ports. In other embodiments, other methods may be used to clean the ports. For example, steam and/or brushes may be used.

Please replace the two paragraphs beginning at page 23, line 7 with the following rewritten paragraphs:

Figure 22 shows part of the plant extraction means of another embodiment. The extraction means comprises a plurality of

extraction assemblies 6 with support tubes 83 connected to a common support bar 84 such that they can be driven up and down simultaneously. Control rods 94 extend through the common support bar 84 and tubes 83 and carry the spacer blocks 90 used to actuate the pinching operation of the insertion fingers 8. The control rods 94 are coupled to a further common support bar 96 so that they also can be driven in unison. Downwards motion of the blocks 90 in this embodiment is limited by a stop member 97 arranged to limit movement of the second support bar 96. It will be appreciated that in alternative embodiments the stop may be omitted.

Figure 23 shows part of a further embodiment, where a plurality of extraction devices on support tubes 83 are suspended from a support gantry 84, which includes actuation for adjusting the separation S of the extraction mechanisms to suit the particular propagation tray.